

derivative with a binder, and optionally a nitrate salt, such as potassium or sodium nitrate.

Please delete the paragraph beginning at page 5, line 17, and replace it with the following paragraph:

The next ingredient of the thermochromic cells of this invention is from about 15-45% by weight of fatty substance. From about 25-35% by weight cholesterol is preferred and about 28% is most preferred. As used herein, the term fatty substance includes, but is not limited to, the compound  $C_{27}H_{15}OH$ , one or any mixture of straight chain monobasic carboxylic acids and associated fatty acids from edible fats and oils, including animal and plant oils formed from fatty acid esters of polyols, in particular liquid triglycerides, for example sunflower oil, corn oil, soybean oil, marrow oil, grapeseed oil, sesame oil, hazelnut oil, apricot oil, almond oil, fish oils, glyceryl triaprocarylate, or plant or animal oils of formula  $R_1COOR_2$  in which  $R_1$  represents a higher fatty acid residue containing from 7-19 carbon atoms and  $R_2$  represents a branched hydrocarbo-based chain containing from 3 to 20 carbon atoms, for example purcellin oil, liquid paraffin, liquid petroleum jelly, perhydrosqualene, wheatgerm oil, beauty-leaf oil, sesame oil, macadamia oil, grapeseed oil, rapeseed oil, coconut oil, grondnut oil, palm oil, castor oil, jojoba oil, olive oil, or cereal germ oil, fatty acid esters, alcohols, acetaylclycerides, octanoates, decanoates, or ricinoleates of alcohols or of polyalcohols, fatty acid triglycerides, glycerides, fluoro oils, and perfluoro oils, as well as synthetic oils, such as Olestra™.

Please delete the paragraph beginning at page 7, line 20, and replace it with the following paragraph:

Photochromic cells made in accordance with this invention include a benzene derivative as a primary ingredient. Appropriate benzene derivatives include, but are not limited to, m-[(p-aminophenyl)azo]benzenesulphonic acid, m-[(4-amino-3-methoxyphenyl)azo]benzenesulphonic acid, 1-naphthylamineazobenzene-4-sulphonic acid, 2'-aminoazobenzene-2-sulphonic acid, 2-phenylazo-p-cresol, 3'-aminoazobenzene-3-sulphonic acid, 4-(4-dimethylaminophenylazo)phenyl, arsonic acid, 4-(4-nitrophenylazo)-resorcinol, 4-(N,N-dimethylamino)azobenzene-4'-isothiocyanate, 4,4'-diaminoazobenzene 4,4'-diethoxyazobenzene, 4-N,N-dimethylaminoazobenzene-4'-isothiocyanate, 4-amino-2',3-dimethylazobenzene hydrochloride, 4-amino-4'-dimethylaminoazobenzene, 4-aminoazobenzene, 4-aminoazobenzene-3,4'-disulphonic acid, 4'-aminoazobenzene-4-sulphonic acid, 4'-aminoazobenzene-4-sulphonic acid (sodium salt), 4-aminoazobenzene-4'-sulphonic acid sodium salt, 4-dimethylamino-2-methylazobenzene, 4-dimethylamino-2'2-methoylazobenzene, 4-dimethylamino-3'-methylazobenzene, 4-dimethylamino-4'-methylazobenzene, 4-dimethylaminoazobenzene, 4-dimethylaminoazobenzene 4'-isothiocyante, 4-dimethylaminoazobenzene-4'-sulphonyl chloride, 4-hydroxyazobenzene, 4-hydroxyazobenzene-4'-sulfonic acid, 4'-hydroxyazobenzene-4-sulphonic acid, 4-methoxyazobenzene, 4-nitrophenyldiazoaminoazobenzene, 4-phenylazo-phenylisothiocyanate, azobenzene, azoxybenzene, chrysoidine, and bariumbis[5-chloro-4-ethyl-2-[(2-hydroxyl-naphthyl)-azo]benzenesulphonate. Azobenzene is the preferred benzene.

Please delete the paragraph beginning at page 8, line 15, and replace it with the following paragraph:

The benzene derivative should be used in the photochromic cells in a concentration of at least 10% by weight. The preferred concentration is between about 10-60% by weight. When used in a concentration of at least 30% by weight of the photochromic cell, several of the benzenes, including azobenzene, 4-methoxyazobenze, azoxybenzene, benzenesulphonate, and 4-hydroxyzobenzene, may be used to impart a red color to the photochromic cells upon exposure to light. Persons skilled in the art can readily ascertain other benzene derivatives besides those specifically noted that are suitable for this purpose. In concentrations of less than about 30%, these benzene derivatives do not give the cells a noticeably red color. Even when not included in the photochromic cells for purposes of color, a benzene derivative is included in the cell in a concentration of at least 10% by weight to "activate" other types of color-imparting chemicals as described below.

Please delete the paragraph beginning at page 9, line 16, and replace it with the following paragraph:

The photochromic compositions may further include a salt that, when exposed to light, is capable of imparting a yellow color to the photochromic cells upon activation by the benzene derivative. This "yellow salt" may be selected from one or more of the group consisting of potassium nitrate, calcium nitrate, calcium citrate, potassium citrate. Potassium nitrate is the preferred yellow salt. The yellow salt in this invention may be included in the cells in a concentration of from about 15-85% by weight, with about 25-

75% by weight being preferred and about is 55% being most preferred.

Please delete the paragraph beginning at page 10, line 1, and replace it with the following paragraph:

When initially placed in the photochromic cells of this invention, the yellow salts and/or blue salts are white/clear crystals. Upon exposure to light, however, the benzene derivative produces metasilicic acid to "activate" the nitrate salts, causing them to change color to blue, yellow, or both, depending on the type(s) of nitrate salts used in the photochromic cells.

Please delete the paragraph beginning at page 10, line 6, and replace it with the following paragraph:

Based on the above-described interactions between the benzene derivative, yellow salts, and blue salts, it can be readily appreciated that a plethora of different color combinations and effects can be obtained. For example, if a blue salt is included in the formulation with at least 30% by weight of a red-color producing benzene derivative, upon exposure to light, the combination of red from the benzene derivative and the blue from the blue salt will produce a purple effect. Likewise, if a yellow salt is included with at least 30% by weight benzene derivative, the combination of red from the benzene derivative and yellow salt will produce an orange effect. However, for example, if a blue salt is included with less than 30% benzene derivative, the benzene derivative will not impart a red color to the cells and, thus, the cells will appear blue. Similarly, if a blue salt and a yellow salt are included with less than 30% benzene derivative, the combination of blue and yellow salts will

produce a green effect. Further, varying concentrations of the salts may be used to produce different shades and hues.

Please delete the paragraph beginning at page 14, line 18, and replace it with the following paragraph:

Photochromic cells function in a much different manner from that of thermochromic cells, whether or not a thermoset resin is present in the photochromic formula. The benzene derivative or "activator" responds to light and the amount and/or type light. Light is absorbed into the very dense prismatic structure of the benzene derivative. The light stimulates the benzene derivative into producing metasilicic acid, which reacts with the white prismatic salt molecules, causing them to change color. The removal of light causes the benzene derivative to cease producing metasilicic acid, thereby causing the cell to fall dormant and revert to their original color.

Please delete the abstract beginning at page 22, line 2 and replace it with the following paragraph:

Novel thermochromic and/or photochromic compositions are described. The thermochromic compositions include a thermoset resin, fatty substance, water, and dye, while photochromic compositions include a benzene derivative and a binder, such as silica gel. When mixed, the ingredients of the thermochromic and photochromic compositions form chromic cells with an outer shell comprised of either the thermoset resin (in the case of thermochromic compositions) or potassium nitrate (in the case of photochromic compositions). When the chromic compositions are exposed to either a heat or light stimulus, the chromic cells compress to causing the dye